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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,566	06/28/2001	Masato Imai	09793822-0149	5465

7590 09/16/2003

Sonnenschein, Nath & Rosenthal
P.O. Box #061080
Wacker Drive Station - Sears Tower
Chicago, IL 60606

EXAMINER

NGUYEN, HOAN C

ART UNIT PAPER NUMBER

2871

DATE MAILED: 09/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/894,566

Applicant(s)

IMAI ET AL.

Examiner

HOAN C. NGUYEN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-13 is/are pending in the application.
- 4a) Of the above claim(s) 2 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/28/03 has been entered.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation "said means (which is not the electrodes) for applying the electric field formed on both substrates and facing electrodes with said liquid crystals in between" must be shown or the feature(s) canceled from the claim(s). There is no "means facing electrodes for applying the electric field" in Figs. 8A-C. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 4-5 are objected to because of the following informalities: There is insufficient antecedent basis for the limitation of "said one substrate" in the claims 4-5.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1, 3, 7-9 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US6437845B1) in view of Tokuo (JP2000075295).

In regard to claims 1 and 13, Yamada et al. teach (Figs. 1 and 2A-C) a liquid crystal display device comprising:

- a first substrate 1a;
- a second substrate 1b arranged facing each other with a pre-set gap in-between;
- liquid crystals 5 held in said gap;
- means for driving a cell with applying an electrical field to said liquid crystals to change the state of orientation thereof;
- a wall structure 2b formed in each of small-sized areas obtained on sub-division along at least one substrate for orienting the liquid crystals lying in each

small-sized area axially symmetrically on application of said electrical field;
wherein a groove structure encompassing a rectangular area is formed on the
first substrate 1a as shown in Fig. 2C;

- a groove structure 2a as Fig. 1 shown formed in each of said small-sized areas in said first substrate 1a and adapted for adjusting the axial symmetrical orientation of said liquid crystals in cooperation with said wall structure.

wherein

- the liquid crystals in each small-sized area are divided into four groups and are oriented symmetrically with respect to an axis perpendicular to a point of intersection of said two diagonals lines according to claim 3 as shown in Fig. 2C;
- the first substrate includes an electrode 3 as means for applying an electrical field to the substrate wherein the groove structure is formed in an insulating layer;
- the photopolymerizable resin (i.e., the monomer) added to the liquid crystal (col. 1 lines 50-53), which results in a liquid crystal display device having excellent display qualities due to the reduction of poorly oriented liquid crystal, thereby stabilizing the state of axially symmetrical orientation produced on application of an electrical field according to claim 7.

- the axially symmetrical orientation of said liquid crystals is distorted along a central axis and display is performed by exploiting TN mode liquid crystals, which utilizes optical rotating characteristics according to claim 8.
- a chiral substance is added to said liquid crystal for distorting the state of orientation thereof (col. 9 lines 15-17) according to claim 9.
- said means for applying the electrical field is made up of signal electrodes formed in columns on one substrate 61 and discharge channels 63 formed in rows in the other substrate 66, said discharge channel being separated from said liquid crystals by a dielectric sheet 65 for generating a plasma addressed liquid crystal display device according to claim 11;
- said means (electrodes 4a/b) for applying the electric field formed on both substrates and facing electrodes with said liquid crystals therebetween according to claim 12;

However, Yamada et al. fail to disclose a liquid crystal display device wherein the groove structure 2b is formed for extending along diagonal lines of said rectangular area encircled by groove structure formed on opposing substrate;

Tokuo (JP2000075295) teaches (Fig. 17) a liquid crystal display device wherein the groove structure 2b is formed for extending along diagonal lines of said rectangular area encircled by groove structure formed on opposing substrate for realizing display of a broad visual field angle with reducing visual angle dependency having been high

toward left and right directions by providing a part of right up and/or right down with respect to either side of a display pixel in a linear part of an alignment controlling inclination part.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Yamada et al. disclosed wherein the groove structure 2b is formed for extending along diagonal lines of said rectangular area encircled by groove structure formed on opposing substrate for realizing display of a broad visual field angle with reducing visual angle dependency having been high toward left and right directions by providing a part of right up and/or right down with respect to either side of a display pixel in a linear part of an alignment controlling inclination part.

2. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US6437845B1) in view of Tokuo (JP2000075295) as applied to claims 1, 3, 7-9 and 11-13 above and in further view of Kojima et al. (US5650867).

Kojima et al. teach (Fig. 3) a liquid crystal display device, wherein said one substrate 14 is a transparent plate and a color filter layer 31, transparent insulative film 13 on color filter for protecting color filter, and a transparent electrically conductive layer (electrode 11) formed on one surface thereof.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Tokuo disclosed with color filter formed on substrate for realizing color display,

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transparent insulating film on color filter for protecting color filter, and a transparent electrically conductive layer formed on one surface thereof.

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US6437845B1) in view of Tokuo (JP2000075295) as applied to claims 1, 3, 7-9 and 11-13 above and in further view of Kume et al. (US6330049B1).

Kume et al teach (abstract) liquid crystals are of negative dielectric constant anisotropy and the surfaces of said two substrates are processed for orientation for orienting said liquid crystals perpendicularly in the absence of applied voltage for forming the partition wall has a section which is inclined with respect to the surface of the first substrate when applied voltage in order to widen viewing angle.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Tokuo disclosed with liquid crystals are of negative dielectric constant anisotropy and the surfaces of said two substrates are processed for orientation for orienting said liquid crystals perpendicularly in the absence of applied voltage for forming the partition wall has a section which is inclined with respect to the surface of the first substrate when applied voltage in order to widen viewing angle.

4. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US6437845B1) in view of Tokuo (JP2000075295) as applied to claims 1, 3, 7-9 and 12-13 above and in further view of YAMAMOTO (EP 0 886170A2).

YAMAMOTO teach a liquid crystal display device wherein the axially symmetrical orientation of said liquid crystals is not distorted along a central axis and display is performed by exploiting ECB mode liquid crystals, which utilizes birefringence for high reliability without light leakage and unnecessary coloring even under a high temperature environment.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal display device as Tokuo disclosed wherein the axially symmetrical orientation of said liquid crystals is not distorted along a central axis and display is performed by exploiting ECB mode liquid crystals, which utilizes birefringence for high reliability without light leakage and unnecessary coloring even under a high temperature environment.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (703) 306-0472. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

HOAN C. NGUYEN
Examiner
Art Unit 2871

chn
August 14, 2003

TOANTON
PRIMARY EXAMINER